

Using Doppler spectra to separate cloud particle phase and analyze ice hydrometer populations



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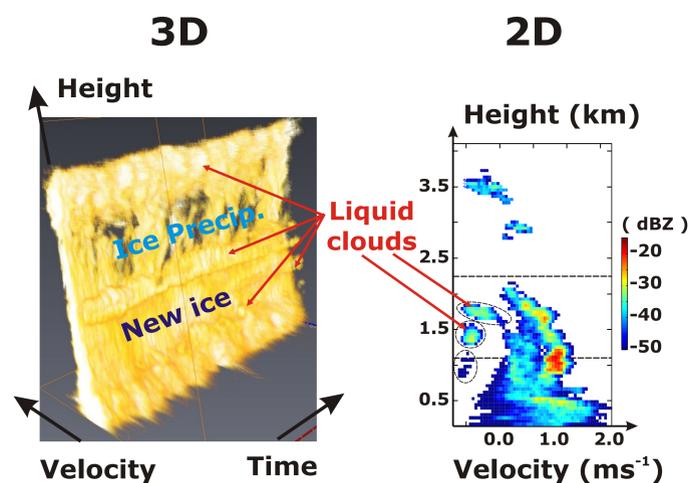


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Introduction

We use Doppler spectra to separate the radiatively important liquid contribution from ice in the total radar reflectivity. The ice is further separated into distinct fall-velocity classes. Results from this spectral separation provide insight into the processes of multilayered mixed-phase clouds.

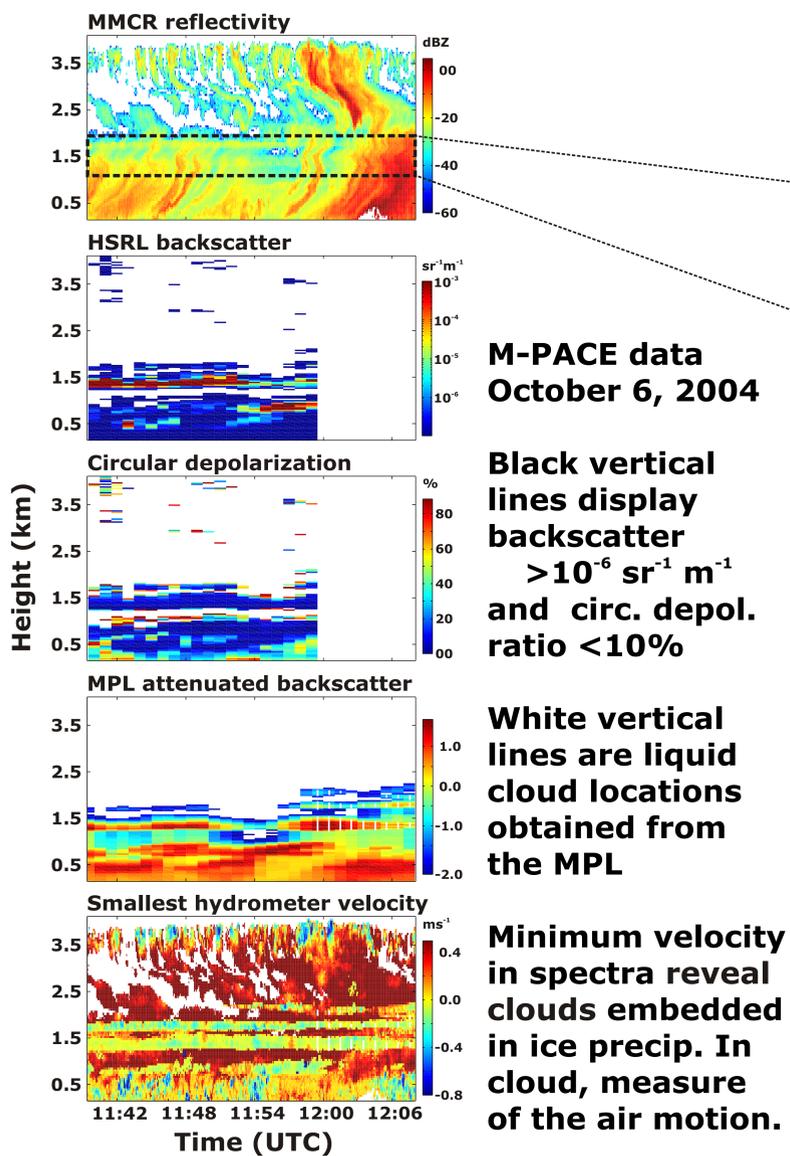
Viewing Doppler Spectra



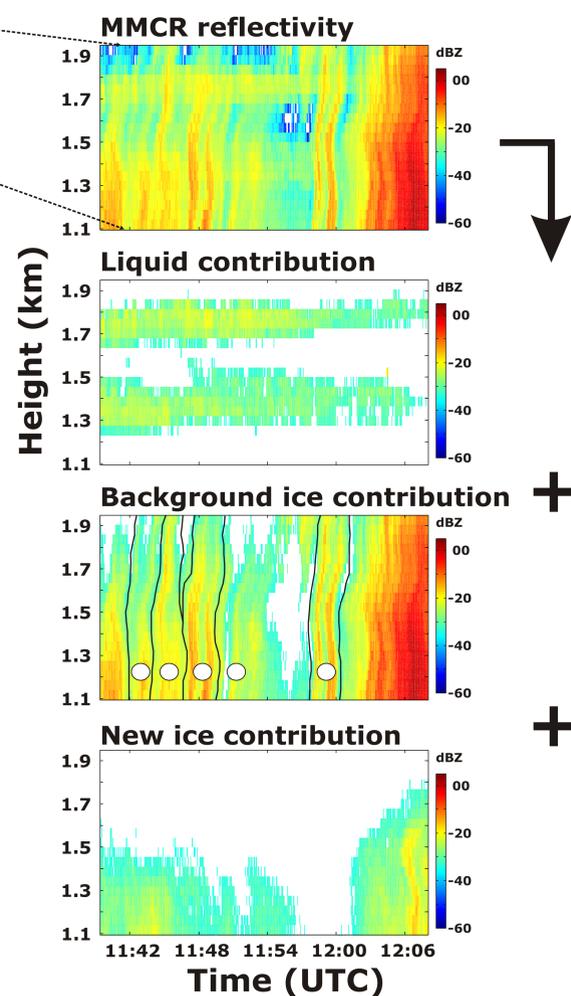
Conclusions

The background and new ice in this study contain four distinct ice crystal populations. One expects plate like crystals in the background ice; the new ice is likely composed of small columnar crystals. Considering the variability in ice one could question the use of a single reflectivity based relation to represent similar periods.

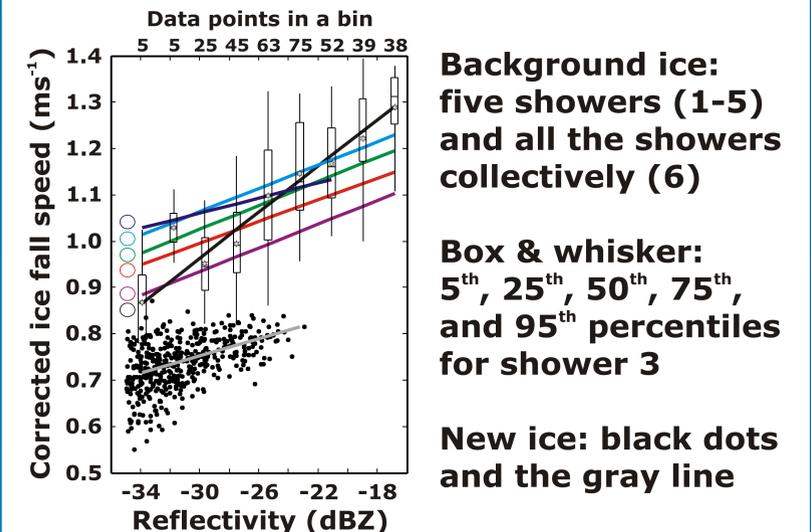
Characterizing clouds



Separating Reflectivity



Analyses



Application of the Bootstrap method reveals that the underlying ice population of ice showers 3 & 4 are different from the rest.

